

REMARKS

Claims 1-6 are pending herein.

I. The rejections of claims 1-3 and 6 under 35 U.S.C. § 112, as noted on page 2 of the Office Action.

On page 2 of the Office Action, the USPTO respectfully rejects claims 1-3 and 6 for failing to particularly point out and distinctly claim the subject matter which applicants regards as the invention.

A. The § 112 rejection of claim 1 regarding the recitation “...the interface layer comprises an oxide of silicon formed so as to be mutually diffused with the silicon substrate, and a high dielectric constant metal element.”

Applicants respectfully note that the relevant portion of claim 1 has been deleted. Thus, it is respectfully asserted that the rejection has been overcome.

B. The § 112 rejection of claim 1 regarding the term “a high dielectric constant metal element.”

Applicants respectfully note that the relevant portion of claim 1 has been deleted. Thus, it is respectfully asserted that the rejection has been overcome.

C. The § 112 rejection of claims 3 and 6 as indistinct.

Applicants respectfully note that on page 3, lines 2-4 of the present specification, it is noted that “[f]urther, the constitutional element of the high dielectric constant insulating film may be made the same as part of the constitutional elements of the interface layer.” In other words, in the structures of claims 3 and 6, the high dielectric metal constitutional element of the insulating film can be the same metal element as the constitutional element of the interface layer.

Thus, it is asserted that the limitations in claims 3 and 6 are clear to a person of ordinary skill in the art. Therefore, it is respectfully asserted that the § 112 rejections have been overcome.

II. The obviousness rejections of claims 1 and 3-5 based on Harada (US 2002/0195643), as noted on page 3 of the Office Action.

The USPTO respectfully rejects claims 1 and 3-5 under 35 U.S.C. § 103(a) based on Harada. Claims 1, 4, and 5 are independent claims.

A. Harada does not teach or suggest that the interface layer comprises a metal silicate, as claimed in claims 1, 4, and 5..

Claim 1 claims in relevant part:

“an interface layer, layer provided on the silicon substrate, the interface layer comprising a metal silicate.” (emphasis added)

Claims 4 and 5 claim similar limitations in method form. No new matter is added by the amendments. Support for the amendment is found on page 5, line 28 through page 6, line 1 of the present specification. Regarding these limitations, it is respectfully not seen where Harada teaches or suggests the claim limitations quoted above.

For example, on pages 3-4 of the Office Action, the USPTO respectfully argues that Harada teaches an interface layer 11b. However, it is respectfully important to note that Harada does not teach or suggest that layer 11b comprises a metal silicate, as claimed in claims 1, 4, and 5. Instead, as seen in paragraph [0075] of Harada, interface layer 11b is made of a silicon oxynitride film containing hafnium, which is completely different from a metal silicate as claimed in claims 1, 4, and 5.

In contrast, present Figures 1 illustrates one possible embodiment of the claimed structure quoted above. For example, present Figure 1 shows an interface layer formed on a silicon substrate 2. As explained on page 5, line 30 through page 6, line 1 of the present specification, the interface layer 5 can be formed of hafnium silicate (i.e., a metal silicate). Thus, the interface layer comprises a metal silicate, as claimed in claims 1, 4, and 5.

The distinction noted above is important and non-trivial because it results in significant advantages over conventional devices. As noted on pages 2-3 of the specification, deterioration in transistor characteristics can occur due to the existence of nitrogen in the vicinity of the Si interface, and this has prevented production of a high-quality MIS transistor. Thus, as further noted on pages 1-2 of the present specification, by providing layers in the vicinity of the silicon substrate substantially without nitrogen (i.e., an interface layer comprising a metal silicate, as claimed in claims 1, 4, and 5), deterioration in transistor

characteristics can be suppressed, and a high-quality semiconductor device can be manufactured.

Thus, it is respectfully asserted that the cited references, taken either alone or in combination, do not teach or suggest all of the limitations of independent claims 1, 4, and 5. Therefore, it is respectfully asserted that independent claims 1, 4, and 5 are not obvious over the cited references.

B. The dependent claims.

As noted above, it is respectfully asserted that independent claim 1 is allowable, and therefore it is further respectfully asserted that dependent claim 3 is also allowable.

III. The obviousness rejection of claims 2 and 6 based on Harada (US 2002/0195643) in view of Bai (US 2001/0013629), as noted on page 6 of the Office Action.

As noted above, it is respectfully asserted that independent claim 1 is allowable, and it is further respectfully asserted that Bai does not overcome the deficiencies in Harada as noted above in section II regarding independent claim 1. Therefore, it is respectfully asserted that dependent claims 2 and 6 are also allowable.

IV. Conclusion.

Reconsideration and allowance of all of the claims is respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Please contact the undersigned for any reason. Applicants seek to cooperate with the Examiner including via telephone if convenient for the Examiner.

Respectfully submitted,

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